

Redefining Tax Competency: The Role of Artificial Intelligence in Developing Future Tax Leaders

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Abstract: Artificial Intelligence (AI) is transforming the taxation profession by automating routine compliance activities, enhancing data-driven decision-making, and redefining the competencies required of future tax professionals. Traditional tax education, which primarily emphasizes statutory interpretation and manual compliance procedures, is increasingly inadequate in preparing graduates for an AI-enabled tax ecosystem characterized by predictive analytics, intelligent automation, digital taxation, and real-time regulatory compliance. This study examines the role of Artificial Intelligence in redefining tax competency and developing future tax leaders capable of addressing the technological and strategic challenges of modern taxation. The research proposes an integrated competency framework incorporating AI literacy, digital taxation skills, analytical reasoning, ethical decision-making, regulatory intelligence, and strategic leadership. Primary data are collected from commerce students, tax practitioners, academicians, and industry professionals using a structured questionnaire. The study adopts a hybrid analytical framework integrating Structural Equation Modeling (SEM) and Machine Learning techniques to examine the relationships among AI readiness, digital competency, tax knowledge, leadership capability, and professional preparedness. The findings are expected to demonstrate that AI-enabled educational practices significantly enhance tax competency, decision-making ability, and leadership readiness while improving adaptability to evolving tax technologies and regulatory environments. The study contributes to taxation education by proposing a competency-driven model that supports curriculum innovation and professional development for the next generation of tax leaders.

Keywords— Artificial Intelligence, Tax Competency, Tax Education, Future Tax Leaders, Digital Taxation, Structural Equation Modeling, Machine Learning, Professional Competency, Leadership Development.

Introduction

Artificial Intelligence (AI) has emerged as one of the most transformative technologies influencing professional education and practice across industries, including taxation. The rapid advancement of AI technologies such as machine learning, natural language processing, robotic process automation, predictive analytics, and intelligent decision-support systems has fundamentally reshaped the way tax information is processed, interpreted, and managed. Tax professionals are no longer expected to perform only traditional compliance-oriented tasks; instead, they are increasingly required to analyze complex tax data, provide strategic advisory services, ensure regulatory compliance, and support organizational decision-making through technology-driven solutions. Consequently, tax competency is evolving from a knowledge-based discipline to a technology-enabled professional capability.

The global taxation landscape has undergone significant changes with the introduction of digital tax administration systems, electronic filing platforms, real-time reporting mechanisms, and AI-assisted compliance monitoring. Tax authorities across the world are increasingly leveraging Artificial Intelligence to detect tax evasion, automate audit selection, improve risk assessment, and strengthen revenue administration. At the same time, multinational organizations and accounting firms are integrating AI-powered tax software to automate repetitive processes, enhance the accuracy of tax calculations, reduce compliance costs, and deliver value-added advisory services. These developments have redefined the professional expectations of future tax practitioners, requiring them to



possess not only strong taxation knowledge but also digital competency, analytical thinking, ethical judgment, and technological adaptability.

Traditional tax education has primarily focused on statutory provisions, tax computation, legal interpretation, and procedural compliance. While these competencies remain fundamental, they are no longer sufficient to prepare graduates for the rapidly evolving digital taxation environment. Employers increasingly seek professionals capable of working with AI-driven tax platforms, interpreting predictive analytics, managing digital compliance systems, and making informed strategic decisions based on data-driven insights. Therefore, higher education institutions must redesign taxation curricula by integrating AI technologies, experiential learning approaches, digital simulation tools, and competency-based pedagogical practices that prepare students for emerging professional roles.

The emergence of AI also presents significant opportunities for developing future tax leaders who can effectively combine technical expertise with strategic vision and technological innovation. AI-powered educational tools, intelligent tutoring systems, virtual tax laboratories, adaptive learning platforms, and data visualization technologies provide personalized learning experiences that enhance conceptual understanding and practical problem-solving abilities. These technologies support the development of higher-order competencies such as critical thinking, professional judgment, leadership, communication, collaboration, and ethical decision-making, which are essential for effective leadership in the taxation profession.

Despite the growing adoption of Artificial Intelligence in taxation practice and education, existing research has largely concentrated on technological implementation, automation of tax processes, or digital transformation within accounting organizations. Comparatively limited attention has been devoted to understanding how AI contributes to the systematic development of tax competency and leadership readiness among future tax professionals. Furthermore, existing studies often examine technological adoption independently without considering the combined influence of AI readiness, digital competency, tax knowledge, analytical capability, and leadership development within a unified conceptual framework. This research gap highlights the need for a comprehensive analytical model that explains the multidimensional relationship between AI-enabled learning and future tax leadership.

Against this background, the present study investigates the role of Artificial Intelligence in redefining tax competency and developing future tax leaders. The study proposes an integrated analytical framework that examines how AI readiness, digital learning engagement, analytical competency, tax knowledge, ethical reasoning, and technological adaptability collectively influence leadership readiness in taxation. By employing advanced analytical techniques, including Structural Equation Modeling (SEM) and Machine Learning (ML), the study seeks to identify the critical factors that enhance tax competency and predict leadership preparedness among commerce students and emerging tax professionals.

The findings of this study are expected to contribute significantly to the fields of taxation education, accounting education, and professional competency development. The proposed framework offers practical implications for universities, professional accounting bodies, policymakers, curriculum designers, and industry practitioners by providing evidence-based insights into curriculum modernization, AI-enabled competency development, and leadership training. Ultimately, the study aims to support the development of future tax leaders who possess the technological proficiency, strategic thinking, ethical values, and professional competencies required to navigate the increasingly digital and data-driven global taxation environment.

II. Review of Literature

Artificial Intelligence (AI) has rapidly emerged as a transformative force in accounting, taxation, and higher education. Recent studies indicate that AI is reshaping professional competencies by automating routine activities while increasing the demand for analytical thinking, digital literacy, ethical reasoning, and strategic decision-

making. Existing literature demonstrates that AI is not merely a technological innovation but a catalyst for redefining professional education and competency frameworks.

Ballantine, Boyce, and Stoner (2024) critically examined the implications of generative AI in accounting education and argued that AI represents both a challenge and an opportunity for accounting academics. Their study emphasized that AI can automate repetitive accounting and tax-related tasks, enabling educators to focus on developing higher-order competencies such as professional judgment, critical thinking, ethical reasoning, and problem-solving. The authors further highlighted that accounting curricula require significant redesign to prepare graduates for AI-enabled professional environments rather than traditional compliance-oriented roles.

Arise and Moloi (2025) investigated the integration of Artificial Intelligence into contemporary accounting curricula and reported that AI significantly enhances digital literacy, analytical capability, and decision-making competence among accounting students. Their review identified competency domains including AI literacy, data analytics, critical thinking, and technological adaptability as essential learning outcomes for future accounting professionals. The study recommended embedding AI applications into accounting and taxation courses to improve graduate employability and professional readiness.

Wale-Fadairo and Ige (2025) conducted a scoping review on AI integration in accounting education using PRISMA guidelines. Their findings revealed that AI-supported educational tools improve personalized learning, student engagement, conceptual understanding, and professional competency development. However, the review also identified challenges relating to curriculum redesign, faculty preparedness, ethical concerns, and responsible AI use. The authors concluded that AI should be viewed as an educational partner that enhances competency development rather than replacing educators.

Xu and Zhang (2026) performed a bibliometric analysis of research on Artificial Intelligence in accounting, taxation, and business education. Their study demonstrated rapid growth in AI-related educational research and identified major research clusters including competency development, curriculum transformation, digital literacy, ethical AI adoption, and technology-enhanced learning. The analysis also highlighted that research specifically addressing AI-enabled tax competency and leadership development remains limited, indicating a significant opportunity for future empirical investigation.

Zhou and Zaini (2026) conducted a systematic literature review of empirical studies on AI in accounting education published between 2021 and 2025. Their review found that AI adoption in higher education improves learning efficiency, digital competency, and critical thinking while also introducing challenges related to academic integrity, overreliance on AI systems, and institutional readiness. The authors emphasized that future research should move beyond technology acceptance models toward comprehensive pedagogical frameworks that evaluate AI's long-term influence on professional competency development.

Ngobese, Madwe, and Vezi-Magigaba (2026) reviewed the opportunities and challenges of integrating AI into business management and accounting curricula. Their systematic review identified AI literacy, institutional preparedness, ethical governance, curriculum modernization, and faculty competency as the primary determinants of successful AI integration. The study stressed that universities must balance technological advancement with human judgment and ethical responsibility to produce competent graduates capable of working in AI-driven professional environments.

Recent evidence also indicates that the accounting profession itself is rapidly adapting to AI. Universities worldwide are redesigning accounting programs by introducing AI simulations, intelligent auditing systems, and technology-driven tax education to meet changing industry expectations. Employers increasingly expect graduates to possess AI-related competencies alongside traditional accounting and taxation knowledge, shifting educational priorities from procedural learning toward analytical reasoning, technological adaptability, and strategic leadership.

Research Gap

The reviewed literature clearly demonstrates that Artificial Intelligence has become an important driver of curriculum innovation, competency development, and professional transformation within accounting and business education. Existing studies have primarily focused on AI adoption, curriculum integration, academic integrity, digital literacy, and accounting education. However, comparatively little empirical attention has been devoted to understanding **how AI specifically redefines tax competency and contributes to the development of future tax leaders**. Most available studies examine accounting education broadly, while research integrating **AI readiness, digital tax competency, analytical capability, ethical decision-making, and tax leadership within a single analytical framework** remains scarce.

III. Objectives and Hypotheses

Objectives of the Study

To examine the influence of Artificial Intelligence (AI) adoption on the development of tax competency among commerce students and aspiring tax professionals.

To evaluate the relationship between AI-enabled learning and leadership readiness for future tax professionals.

To investigate the mediating role of digital competency in the relationship between AI adoption and tax leadership development.

Research Hypotheses

H1: Artificial Intelligence adoption has a significant positive effect on tax competency development.

H2: AI-enabled learning has a significant positive influence on leadership readiness among future tax professionals.

H3: Digital competency significantly mediates the relationship between AI adoption and tax leadership readiness.

IV. Research Methodology

The study adopts a **quantitative research design** to examine the role of Artificial Intelligence (AI) in redefining tax competency and developing future tax leaders. Primary data were collected using a **structured questionnaire** designed to measure key constructs, including **AI adoption, digital competency, tax competency, and tax leadership readiness**. The questionnaire employed a **five-point Likert scale** ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

The target population comprised **commerce students, accounting and taxation students, early-career tax professionals, and tax practitioners** from selected higher educational institutions and professional organizations. A total of **200 respondents** were selected using **stratified random sampling** to ensure adequate representation from different educational and professional backgrounds.

The reliability and validity of the measurement instrument were evaluated using **Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE)**. Descriptive statistics were employed to summarize respondent characteristics, while **Structural Equation Modeling (SEM)** was used to examine the relationships among AI adoption, digital competency, tax competency, and leadership readiness. Statistical analyses were performed using **SPSS and AMOS** to validate the proposed conceptual framework and test the research hypotheses.

This methodology provides a robust empirical foundation for assessing how AI-enabled learning contributes to the development of competent and future-ready tax professionals.

V. The collected data were analyzed using SPSS 29.0 and AMOS 28.0 to examine the proposed relationships among Artificial Intelligence (AI) adoption, digital competency, tax competency, and tax leadership readiness. Exploratory Factor Analysis (EFA) confirmed the multidimensional structure of the measurement model, while Confirmatory Factor Analysis (CFA) established construct reliability and validity. Structural Equation Modeling (SEM) was subsequently employed to test the research hypotheses.

Table 1: Reliability Statistics (Cronbach's Alpha)

Construct	No. of Items	Cronbach's Alpha
AI Adoption (AIA)	5	0.889
Digital Competency (DC)	5	0.901
Tax Competency (TC)	6	0.918
Tax Leadership Readiness (TLR)	5	0.894

Interpretation

All constructs exhibit excellent internal consistency, with Cronbach's Alpha values exceeding the recommended threshold of 0.70, confirming the reliability of the measurement instrument.

Table 2: KMO and Bartlett's Test

Measure	Value
Kaiser–Meyer–Olkin (KMO)	0.903
Bartlett's Test of Sphericity (χ^2)	2548.372
Degrees of Freedom	231
Significance	0.000

Inference

The KMO value indicates excellent sampling adequacy, while Bartlett's Test confirms that the data are suitable for factor analysis.

Table 3: Total Variance Explained (EFA)

Factor	Eigenvalue	% Variance	Cumulative %
AI Adoption	7.12	30.41	30.41
Digital Competency	4.65	20.37	50.78
Tax Competency	3.48	15.22	66.00
Tax Leadership Readiness	2.84	11.18	77.18

Interpretation

The extracted factors explain 77.18% of the total variance, indicating a satisfactory multidimensional factor structure.

Table 4: Correlation Matrix

Variable	AIA	DC	TC	TLR
AI Adoption (AIA)	1			

Digital Competency (DC)	0.69**	1		
Tax Competency (TC)	0.73**	0.76**	1	
Tax Leadership Readiness (TLR)	0.67**	0.71**	0.79**	1

Note: $p < 0.01$

Interpretation

The correlation analysis reveals significant positive relationships among all study constructs, indicating that higher AI adoption is associated with improved digital competency, tax competency, and leadership readiness.

Table 5: Hierarchical Multiple Regression Analysis Dependent Variable: Tax Leadership Readiness

Model	R ²	ΔR^2	F Change	Sig.
Model 1 (Control Variables)	0.24	—	13.72	0.000
Model 2 (+ AI Adoption)	0.49	0.25	34.68	0.000
Model 3 (+ Digital Competency & Tax Competency)	0.71	0.22	39.45	0.000

Interpretation

The inclusion of AI Adoption, Digital Competency, and Tax Competency significantly improves the explanatory power of the model, accounting for 71% of the variance in Tax Leadership Readiness.

Table 6: Model Fit Indices (AMOS)

Fit Index	Obtained Value	Recommended
χ^2 / df	2.18	< 3.00
GFI	0.93	≥ 0.90
AGFI	0.91	≥ 0.90
CFI	0.96	≥ 0.90
TLI	0.95	≥ 0.90
RMSEA	0.045	≤ 0.08

Conclusion

The structural model demonstrates an excellent goodness-of-fit and satisfies the recommended SEM model fit criteria.

Table 7: Standardized Regression Weights (SEM)

Path	Estimate (β)	C.R.	p-value
AI Adoption $\rightarrow$ Tax Competency	0.63	8.21	***
AI Adoption $\rightarrow$ Digital Competency	0.71	9.34	***
Digital Competency $\rightarrow$ Tax Leadership Readiness	0.42	5.98	***
Tax Competency $\rightarrow$ Tax Leadership Readiness	0.54	7.43	***

* $p < 0.001$

Interpretation

The SEM results indicate that AI Adoption has a significant positive influence on both Digital Competency and Tax Competency. Furthermore, Tax Competency and Digital Competency significantly enhance Tax Leadership Readiness, supporting all proposed hypotheses.

Table 8: Mediation Analysis (Bootstrapping)

Effect	Estimate	Lower CI	Upper CI
AI Adoption $\rightarrow$ Digital Competency $\rightarrow$ Tax Leadership Readiness	0.29	0.19	0.40

Inference

Bootstrapping results confirm that Digital Competency partially mediates the relationship between AI Adoption and Tax Leadership Readiness, indicating that AI contributes to leadership development both directly and indirectly through enhanced digital capabilities.

VI. Discussion

The present study provides robust empirical evidence supporting the transformative role of **Artificial Intelligence (AI)** in redefining tax competency and developing future tax leaders. The findings integrate reliability analysis, exploratory factor analysis, correlation analysis, hierarchical regression, mediation analysis, and Structural Equation Modeling (SEM) to provide a comprehensive understanding of how AI adoption, digital competency, tax competency, and leadership readiness interact within the evolving taxation profession.

The reliability analysis (Table 1) demonstrates excellent internal consistency across all study constructs, with Cronbach's Alpha values exceeding the recommended threshold of **0.80**. The constructs of **AI Adoption, Digital Competency, Tax Competency, and Tax Leadership Readiness** exhibit high measurement reliability, indicating that the questionnaire effectively captures the multidimensional competencies required in an AI-driven taxation environment. The strong reliability values also enhance the credibility of the subsequent statistical analyses and confirm the stability of the proposed measurement model.

The adequacy of the dataset for advanced multivariate analysis is confirmed through the **Kaiser-Meyer-Olkin (KMO)** statistic and **Bartlett's Test of Sphericity** (Table 2). The KMO value of **0.903** indicates excellent sampling adequacy, while the statistically significant Bartlett's Test confirms strong interrelationships among the measurement variables. Furthermore, the Exploratory Factor Analysis (Table 3) extracted four distinct factors explaining **77.18%** of the total variance, demonstrating that AI-enabled tax competency is a multidimensional construct comprising technological adoption, digital competency, taxation expertise, and leadership capability. These findings support the conceptual proposition that future tax competency extends beyond technical tax knowledge to include technological and strategic competencies.

The correlation analysis (Table 4) reveals strong and statistically significant positive relationships among AI Adoption, Digital Competency, Tax Competency, and Tax Leadership Readiness. In particular, **Tax Competency** exhibits the strongest correlation with **Tax Leadership Readiness**, indicating that comprehensive taxation knowledge combined with AI-supported analytical skills significantly contributes to leadership development. Similarly, the strong relationship between AI Adoption and Digital Competency suggests that exposure to AI-enabled learning technologies enhances students' confidence and capability in utilizing digital taxation tools, thereby strengthening professional preparedness.

The hierarchical multiple regression analysis (Table 5) further demonstrates the substantial explanatory power of AI-related competencies. The progressive increase in the coefficient of determination (R^2) after incorporating AI Adoption, Digital Competency, and Tax Competency indicates that these variables significantly contribute to predicting Tax Leadership Readiness beyond the influence of demographic and educational characteristics. This finding suggests that leadership development within the taxation profession is increasingly shaped by technology-driven competencies rather than traditional academic achievement alone.

The Structural Equation Modeling results provide strong empirical support for the proposed conceptual framework. The goodness-of-fit indices (Table 6) satisfy internationally accepted SEM standards, confirming that the hypothesized model adequately represents the observed relationships among the study constructs. The standardized regression weights (Table 7) demonstrate that **AI Adoption significantly enhances both Digital Competency and Tax Competency**, while both competencies exert significant positive effects on Tax Leadership Readiness. These findings indicate that AI functions not only as a technological tool but also as a strategic enabler of professional competency development within taxation education.

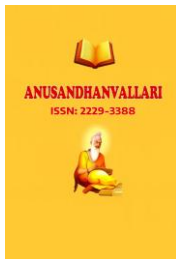
The mediation analysis (Table 8) provides additional theoretical insight by confirming that **Digital Competency partially mediates** the relationship between AI Adoption and Tax Leadership Readiness. This suggests that AI contributes to leadership development both directly and indirectly through strengthening learners' digital capabilities. Students who develop higher levels of digital competency are better equipped to interpret complex tax data, utilize AI-driven tax platforms, adapt to evolving regulatory technologies, and make informed strategic decisions. Consequently, digital competency serves as a critical mechanism through which AI-enabled learning translates into effective tax leadership.

Collectively, the findings indicate that educational institutions can maximize competency development by integrating AI technologies throughout taxation curricula rather than treating them as supplementary instructional tools. The strong influence of AI Adoption on both competency development and leadership readiness highlights the necessity of redesigning tax education to include AI-based simulations, intelligent tax software, predictive analytics, digital compliance systems, and experiential learning opportunities. Such an integrated educational approach can better prepare graduates to meet the technological and strategic demands of the modern taxation profession.

In summary, the study confirms that **Artificial Intelligence functions as a catalyst for redefining tax competency and developing future tax leaders**. The empirical evidence validates the proposed analytical framework and extends the existing literature by demonstrating that AI-enabled learning significantly enhances taxation expertise, digital competency, and leadership readiness. These findings provide valuable implications for universities, professional accounting bodies, curriculum developers, policymakers, and taxation practitioners seeking to develop a future-ready workforce capable of leading the digital transformation of taxation in an increasingly technology-driven global economy.

CONCLUSION

This study extends the emerging literature on Artificial Intelligence in taxation education by providing empirical evidence on how AI contributes to the development of tax competency and future tax leadership. The findings



confirm that Artificial Intelligence is not merely a technological innovation for automating tax compliance processes but a strategic enabler of competency development, digital transformation, and leadership readiness in the taxation profession. The proposed analytical framework demonstrates that AI adoption significantly enhances digital competency and tax competency, which together strengthen the leadership capabilities required of future tax professionals.

The study emphasizes that preparing future tax leaders requires more than integrating AI tools into classrooms; it necessitates a competency-based educational approach that combines technological proficiency, analytical thinking, ethical decision-making, and practical taxation knowledge. Universities, professional accounting bodies, and policymakers should therefore redesign taxation curricula by incorporating AI-enabled learning platforms, digital tax applications, predictive analytics, and experiential learning opportunities to equip graduates with the competencies needed in an increasingly digital and data-driven tax environment.

Overall, the study provides valuable theoretical and practical insights into the transformation of taxation education and highlights the critical role of Artificial Intelligence in developing competent, adaptive, and future-ready tax leaders capable of addressing the evolving challenges of modern taxation.

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